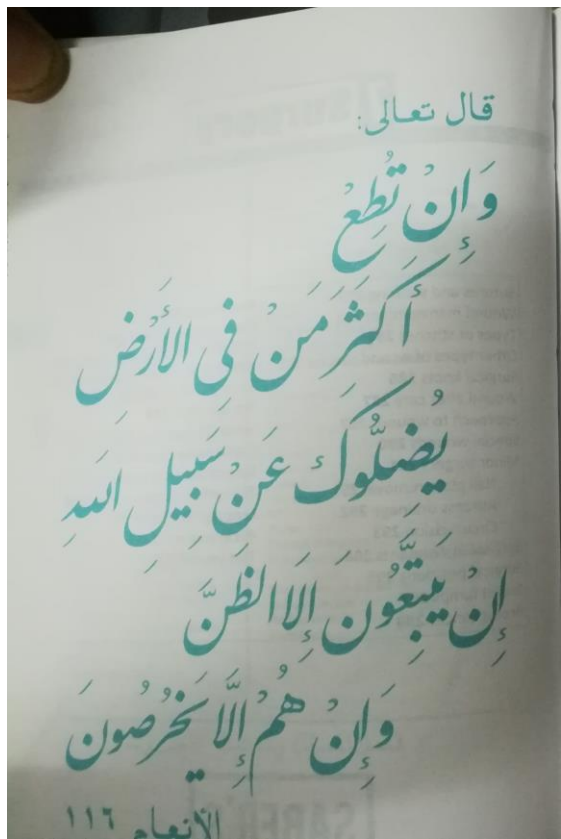


7 Surgery

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1. Sutures and Suturing

A. Types of sutures (commonly used sutures)

Catgut	natural	polyfilament	absorbable
Vicryl	synthetic	polyfilament	absorbable
Nylon	synthetic	monofilament	non-absorbable
Prolene	synthetic	monofilament	non-absorbable
Silk	natural	polyfilament	non-absorbable

► Catgut sutures are made of purified collagen fibers from the intestine of healthy cows or sheep (Sorry, no cats).

B. Sutures size

Sizes are ordered from **10-0** (the smallest invisible to naked eye) through **5-0** (typical size for fine vascular anastomosis), **2-0** (typical size for abdominal closure), to **4** (the largest available - size of sternal wires)

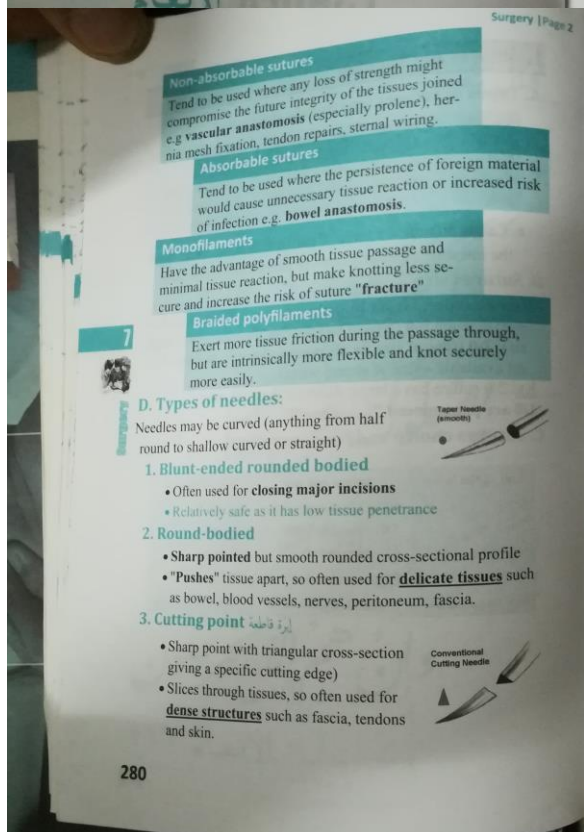
Ex: 2/0 suture has a larger diameter than 5/0 suture.

1/0 are pronounced "one-oh"

C. Sutures choice and time to removal

Part of the body	Suture and size	Time of removal
Scalp	2/0 or 3/0 - non-absorbable	7 days
Trunk	3/0 - non-absorbable	10 days
Limbs	4/0 - non-absorbable	10 days
Hands	5/0 - non-absorbable	10 days
Lips, tongue, mouth	absorbable e.g. 6/0 vicryl	3-7 days (~ 5 days)

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2. Wound management and basic suturing

► Assessment of the wound (see later)

1. Clean the wound

- By 0.9% (normal saline) or aqueous chlorhexidine.
- Don't use H₂O₂ or strong povidine iodine (Betadine) solutions
- Dirty wound may respond to pressure saline irrigation (19 g needle attached to 20 ml syringe) *أصغر حفرة وكثرة غسل الجرح بملح*
- Or may require to be scrubbed with a tooth brush (use goggles to ↓ chance of conjunctival splash back) *أو يمكن بحاج تفعله بفرشة أسنان*
- Devitalized or grossly contaminated wound edges are usually needed to be trimmed back (debrided) *نقص* except on the hand or face. *فص الأنسجة الميتة*
- If dirt or other F.B material is visible despite these measures, refer to a specialist who may choose to leave the wound open.

2. Eliminate dead space by deep suture or a drain, but avoid suturing fat which contributes no strength and may lead fat necrosis

يعني لو الجرح عميق خذ غرز من جوفه عشان ماتسبش فراغ

3. N.B: Haemostasis is very important:

- By compression over the wound.
- Suturing around the bleeder.

• Never close over a bleeder

4. Use the finest suture possible to maintain wound closure: 5/0 or 6/0 for the face, 4/0 or 5/0 for the hand, 2/0 to 4/0 for the trunk.

5. Use a needle holder where possible to minimize needle stick injury.

6. Evert the wound: if it looks inverted, it will leave a depressed scar.

7. Hold the needle 2/3 of the way from the needle tip

امسك الإبرة من ثلثي المسافة من سن الإبرة

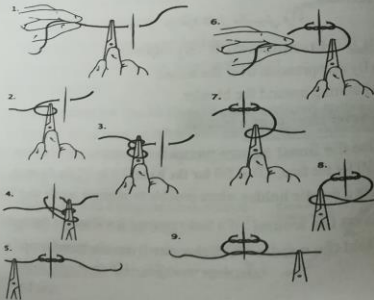
281

8. Lift the skin edge farthest away without pinching or damaging it.
9. Pierce the skin with the needle at 90° (perpendicular).
10. Rotate your wrist to pass the needle into the middle of the wound.
11. Release the needle holder and clasp the needle again as it protrudes into the wound, rotating it out of the wound.
12. Next, press the near side with the closed forceps to evert the skin edge and press the needle through, taking a small semi-circular course to exit at 90° to the wound edge.

بعض ادخل بالإبرة عمودى على الجلد وبعدين لف ايديك عشان تعدى الإبرة من فتحة الجرح وبعدين فك ماسك الإبر وامسك الإبرة تالى وبعديها من ناحية الجرح الثانية وانت ماسك الجلد بماسك عشان تدخل الإبرة كنهس وانت طالع هتقطع برصه عمودى رى مادخلت.

13. Now perform a surgeon's knot

Wrap the long end of the threads around the needle holder, which is used to transfer the coil around the short end (grasp the short tail and pull in towards you pulling the long end away)



- بعد ما طعنت بالإبرة فى عندك طرفين طويل فى نهايته الإبرة وطرف قصير، لف الطرف الطويل الفين على ماسك الإبرة وبعدين امسك الطرف القصير وشده باحيتك وانت بتشد الطرف الطويل بعيد عنك.
- كرر اللفة حتى مرة أو اثنين كان.

14. Repeat the cycle

15. Remember to cut the ends of the thread off, leaving a few mm, so that they can be easily removed later.

- Vessels: 1 to 2mm
- Abdominal fascia closure: 5mm
- Skin sutures, drain sutures: 5 to 10mm (makes them easier to find and remove)

► When removing sutures, clean the wound with antiseptic solution, use forceps or a blade and pull the suture out across rather than away from the wound.

• Tie sutures just tight enough for the edges to meet.

Key points and facts when suturing

- Don't close a wound under tension "Approximate, don't strangulate"
- Handle the skin edges with toothed forceps only (needle holder).
- Avoid too many deep absorbable sutures.
- Mattress sutures (see later) are useful on some deep wounds but avoided on hands and face.
- If a suture doesn't look right, take it out and try again.
- If it is still doesn't look right, get help.
- All wounds leave scars, you must warn your patient of this.
- Hypertrophic scars are more likely on the sternum and deltoid area.
- Speed of healing depends on site: face heals more quickly than trunks and limbs.

trunks and limbs.

- Children and young adults heal more quickly and achieve stronger scars than the elderly, the chronically ill and those on steroids.
- Stretch marks are caused by epithelial growth into suture tracks and occur when sutures are left in longer than 7 days.
- If sutures are removed too early the wound may dehiscence leaving a worse scar.

3. Types of stitches

1. Simple interrupted stitch
2. Vertical mattress stitch

- A simple stitch is made.
- The needle is reversed and a small bite is taken from each wound edge.
- The knot ends up on one side of the wound.
- Also known as far-far near-near stitch, or the end perpendicular to wound.



3. Horizontal mattress stitch

- Used for deep wounds, wounds over joints to approximate skin edges evert tissue well
- A simple stitch is made.
- The needle is reversed and the same size bite is taken again: oriented parallel to wound.



4. Simple running (continuous) stitch

- Stitches made in succession without knotting each stitch.

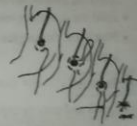


5. Subcuticular stitch (subcu)

- A stitch (usually running) placed just underneath the epidermis, can be either absorbable (e.g. pull out stitch if non absorbable).

6. Purse string suture

- A stitch that encircles a tube perforating a hollow viscus (e.g. gastrostomy tube), allowing a hole to be drawn tight and thus preventing leakage



Reference of the above figures: Surgical recall 4th ed.

4. Other types of wound closure

1. Steri-strips

- Adhesive skin closure strips allow skin edges to be opposed with even distribution of forces.
- They are inappropriate over joints.
- But useful for pretibial lacerations when skin is notoriously thin and sutures are likely to cut out.

- Before application, make steri-strips stickier by applying tincture of benzoin to dry skin around the wound.
- Leave 3-5mm gaps between steri-strips.

Reference of this figure: Oxford handbook of emergency medicine



2. Skin tissue glue

- Particularly useful in children with superficial wounds and scalp wounds.
- After securing haemostasis, oppose the dried skin edges before applying glue to the wound.
- Hold the skin edges together for 30-60 sec. to allow the glue to set.
- Don't use tissue glue near the eyes or to close wounds over joints.

3. Staples

- Quick and easy to apply particularly suited to scalp wounds.
- Staple removers are required for removal.

5. Surgical knots

1. **Basic surgical knot:** the square knot.



2. **The surgical knot:** a double wrap through.

Reference of the above figures: Surgical recall 4th ed.



6. Wound after care

1. Dressing

- Apply antiseptic solution e.g. Betadine.
- You may apply local antibiotic e.g. Fucidin cream or ointment.
- Dress the wound with dry non-adherent dressing.

2. General advice:

- Advise to keep wounds clean and dry for the first few days.
- Limb wounds require rest and elevation for the first 24 hrs.
- After this, restrict movements to avoid stress causing the suture line to open up (especially where the wound is over a joint).
- Warn all patients to return if features of infection develop (redness, ↑ pain, swelling, fever, red streaks up the limb).

3. Prescribing:

- Patient may need iv Ab (or IM)
R/FLUMOX 500MG, 16M IM
R/FLUMOX 500 CAP. 1X4X70R R/CEPOREX 500 1X2X7
قرص 3 مرات يوميا بعد الأكل R/BRUFEN 400 1X3

• غيار يومية 3 أيام ثم يوم بعد يوم
• تلك المرة بعد يوم

7. Approach to wounds

- Wounds often have medico-legal implications, therefore record notes thoroughly.
- Resuscitation is the initial priority for the seriously wounded patient.
- Stop bleeding by applying direct pressure.

History:

Key questions are:

1. What caused the wound? (knives/ glass may injure deep)

2. Was there a **crush component**? (considerable swollen structures)
3. **Where** did it occur? (contaminated or clean environment)
4. Was broken **glass** (or china) involved? (if so, obtain x-ray)
5. **When** did it occur? (old wounds may need delayed closure & Abs)
6. **Who** caused it? (has the patient a safe home to go to?)
7. Is tetanus cover required?

Examination:

- Record the following: **length**, **site**, **contamination**, **orientation** (vertical or horizontal), **infection** (localized or spreading), **neuro-surgical injury**, **tendons** **ascular injury** (distal pulses?), depth, type of the wound.
- **X-ray** if there is suspicion of a fracture, involvement of jaw, penetration of body cavity or FB.

Further assess of skin wounds:

- Most metals (except aluminum) and glass objects > 1mm in diameter will show up an x-ray, some objects (e.g. wood) may not; US may demonstrate them.
- **Note:** X-ray all wounds from glass, which fully penetrate the skin.
- The most important investigation is wound exploration under appropriate anaesthesia.

Do not explore the following wounds in the ER

1. Stab wounds to the neck, chest, abdomen or perineum.
2. Compound fracture wounds requiring surgery in the theatre.
3. Wounds over suspected septic joints or infected tendon sheath.
4. Most wounds with obvious neurovascular tendon injury needing repair.
5. Other wounds requiring special experience (e.g. eyelids).

- Give adequate anaesthesia: (1% lidocaine)
- **Don't inject local anaesthesia (LA) into the edges of an infected wound:** it will not work in that acidic environment and it may spread the infection.
- **Inspect** wounds for F.B.s and damage to underlying structures.
- **Press on any bleeding point for ≥ 1 min.**, and then look again.
- **Lidocaine with adrenaline** is useful in scalp wounds which are bleeding profusely. (avoid penis, ear pinna, digits & tip of the nose)
- If bleeding continues, consider a **tourniquet for up to 15 minutes**.
- **Never leave a patient alone with a tourniquet on.**
- **Don't blindly "clip" bleeding points**, for fear of causing iatrogenic neurovascular injury.
- Sometimes, small blood vessels in the subcutaneous tissues can be safely ligated using an appropriate absorbable suture (e.g. 4/0 or 6/0 vicryl).

تدابير التعامل مع الجروح

1. اعرف سبب الجرح (سكين □ خنجر □ رصاص □ رصاصة).
2. ابحث عن كسور □ قطع أعصاب □ قطع أوتار.
3. ابحث عن أجسام غريبة داخل الجرح مثل (إبراج □ حديد □ خشب).
4. وقف النزيف عن طريق الضغط على الجرح أو ربط الطرف المصاب أو ربط الأوعية الصغيرة النازفة بترز جراحية.
5. اغسل الجرح جيدا لتحويل ملح ويأكد أن الجرح غير ملوث وقص أي أنسجة ميتة.
6. تأكد أن الجرح ليس عميقا وليس هناك أي إصابة داخلية غير ظاهرة أمامك.
7. أنظر الجرح بحرصا موضعيا مثل البنوكوين □ أدريتاين في الجروح النازفة بشدة.
8. لا تعطي أدريتاين في أطراف الأصابع أو التقطب أو مقعنة الأنف.
9. اغتر بوح الخطأ المناسب وحجمه لمدة نوع الجرح ومكانه وحجمه.
10. خط الجرح بترز جراحية بسيطة في معظم الحالات في قسم الطوارئ، وحدد نوع غرورك في بعض أنواع الجروح مثل الجروح العميقة أو الموجودة فوق المفاصل اختر لها غرز من نوع mattress.
11. غلب الجرح بيتادين بعد الغرز وغطي الجرح بشاش أو شاش وبويسيدين.
12. لا تنس أن تملأ الشعر حول الجرح جيدا حتى يظهر بمحدوده كلها واحذر أن يدخل الشعر داخل الجرح بعد غيظته (مانعا الحاجين لمسوح حلقهم).

2. Was there a **crush component**? (considerable swollen structures)
3. Where did it occur? (contaminated or clean environment)
4. Was broken **glass** (or china) involved? (if so, obtain x-ray)
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- **Never leave a patient alone with a tourniquet on.**
- **Don't blindly "clip" bleeding points**, for fear of causing iatrogenic neurovascular injury.
- Sometimes, small blood vessels in the subcutaneous tissues can be **safely ligated** using an appropriate absorbable suture (e.g. 4/0 or 6/0 vicryl).

شروط التعامل مع الجروح

1. التعرف سبب الجرح (سكتة - حصة - رضامة).
2. أمت من كسور - قطع أصابع - قطع أوتار.
3. أمت من أجسام غريبة داخل الجرح مثل (زجاج - حديد - خشب).
4. وقت النزيف عن طريق الضغط على الجرح أو ربط الطرف المصاب أو ربط الأوعية الصغيرة القريبة من جرحية.
5. غسل الجرح جيداً بخليل ملح ويؤكد أن الجرح غير ملوث وقص أي أنسجة ميتة.
6. تأكد أن الجرح ليس عميقاً وليس هناك أي أنسجة داخلية غير ظاهرة أمامك.
7. أمت الجرح عميقاً وموصلاً مثل التيموكلين - الأرباكلين في الجروح الباردة مشددة.
8. أمت الأرباكلين في أطراف الأصابع أو القلب أو مقدمة الألف.
9. أمت زرع الجرح المصاب وجهه لثمة أنواع الجرح ومكانه وجهه.
10. خط الجرح بزر جراحية بسيطة في معظم الحالات في قسم الطوارئ وحدد نوع غرزك.
11. غلب الجرح يحتاج بعد الغرز وخطي الجرح بشاش أو شاش وفلوسيسين.
12. لا تنس أن تزيل الشعر حول الجرح جيداً حتى يظهر عموده كلها وأحذر أن يدخل الشعر داخل الجرح بعد خياطته (مأمعا الحامض قسوع حلاقيه).

١٣. حدد المدة المناسبة لالتئام الجرح وفق العرز وصف المضاد الحيوي المناسب والمكان المناسب.
١٤. تأكد من بعد الجرح عن أي مياه أو بلى.
١٥. لا تنس أن تحدد: هل يحتاج المريض لحقنة تيتانوس ؟؟

8. Special wounds

Bite wounds:

- Bites cause contaminated puncture wounds, contaminated crush injuries or both.
- **Explore** fresh bite wounds under appropriate anesthetic.
- **Debride** and clean thoroughly with normal saline.
- **Refer** significant facial wounds & wounds involving tendons or joints to a specialist.
- **Choose** between primary or delayed closure.

Wounds not usually suitable for primary closure in the ED:

- Stab wounds to the trunk and neck.
- Wounds with associated tendon, joint or neurovascular involvement.
- Wounds with associated crush injury or significant devitalized tissue / skin loss.
- Other heavily contaminated or infected wounds.
- Most wounds > 12hrs old (except clean facial wounds).

- **Don't close puncture bite wounds which can't be satisfactorily irrigated.**

Give co-amoxilav Ab.

- Assess patient need to tetanus prophylaxis.

- **If the bite is from rabid animal, refer.**

References

1. Oxford clinical surgery, P 84,85,522-524
2. Oxford emergency, P 400-413
3. OHCM, P 556,557
4. Surgical recall, P 52-58,60-64
5. Oxford-examination, P 632,633

► Figures are derived from surgical recall 4th ed.

9. Minor surgery

Includes:

1. Nail extraction
2. Abscess drainage
3. Cut wound suturing
4. Male circumcision
5. Removal of skin lesions (sebaceous cyst, dermoid cyst, wart, lipoma)

1) Nail plate removal

1. Remove the nail plate to repair nail bed injuries or to inspect the nail bed for potential injuries
2. Insert the **closed tips of a fine scissors** between the nail bed and the nail plate.
3. Hold the scissors **parallel to the long axis of the finger.**
4. **Slightly angle the tips of the scissors** towards the nail plate to prevent any damage to the nail bed
5. **Advance the tips of the scissors 1 to 2 millimeters**
6. **Open the blades of the scissors** to separate the nail bed from the nail plate.
7. **Close the blades of the scissors.**
8. **Continue to advance the tips of the scissors in 1 to 2 mm**



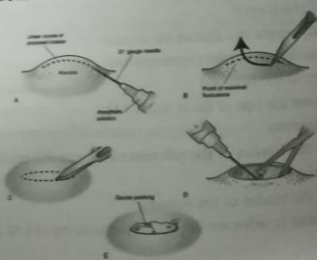
References of this figure:
Emergency medicine procedures

9. Stop advancing the scissors when the tips of the blades are at the level of the eponychium.
10. Grasp the nail plate with a hemostat.
11. Pull the nail plate parallel to the long axis of the finger to completely remove it from the finger.

2) Abscess drainage:

1. If there is pus in doubt, you should let it out.
 2. Incise and drain.
 3. The incision should be over the pointing part of the abscess.
 4. Squeeze to evacuate the pus.
 5. Insert the forceps (closed) and open it inside the abscess to damage the loculi dividing the abscess and drain all the contents.
 6. Insert a piece of gauze soaked with betadine into the cavity to fill it and prevent early abscess closure. (دمل قفيل (شاش بالبيتادين)
- Change the gauze every day until there is no pus coming out and let the abscess close with granulation tissue (no suturing)

Give
 • R/CEFOTAX 500MG VIAL ١٢ ساعة لمدة ٣ أيام
 THEN R/MEGAMOX 625 1X3X4
 • R/BRUFEN 400 1X3



- A. Infiltration of local anesthetic solution over the abscess.
 - B. A straight incision to drain the abscess.
 - C. An elliptical incision to drain the abscess.
 - D. The wound is irrigated with sterile saline. Any pockets of pus are opened by blunt dissection with the hemostat.
 - E. The wound is packed open.
- Reference of this figure: Emergency medicine procedures

3) Circumcision:

Contraindicated if:

- Hypospadias.
- Epispadias.
- Bleeding disorder.

Postpone if:

- Presence of inguinal hernia.
- Premature & unstable child.
- Presence of local infection.
- Presence of extensive rash (napkin's dermatitis).

Steps (crushing technique):

1. Clean the area & scrub with antiseptic solution (betadine).
2. Retract the prepuce and thoroughly remove all smegma secretion up to the post-cornal sulcus, any retained smegma will cause adhesions later on.
3. Put the prepuce back to its normal position after complete removal of smegma secretions.

4. Anaesthesia:

- a. Performed without an anaesthesia in the first 2 months.
- b. From 2-6 months: local anaesthesia is used. Syringe with fine needle, inject 3-4ml of xylocaine without adrenaline exactly in the midline spot at the base of the dorsum of the shaft of the penis to block the dorsal nerve of the penis.
 - Wait 3min, then start.
- c. 6 months or older, give GA.

5. Hold the inner skin together with the outer skin by 2 forceps inserted at 12 O'clock and 5 O'clock.
6. Pull gently forward.
7. Put your left thumb just after the glans to protect it.
8. Apply the bone cutting forceps after your thumb distal to the glans.
9. Apply firm pressure for 3-4 min (help haemostasis).
10. Cut the prepuce with a sharp scalpel distal to the bone cutting forceps.
11. Retract the prepuce gently.
12. Observe the child for 10 min. for bleeding.
13. Put sufratulle dressing around the coronal sulcus and put another gauze dressing around the sufratulle. Fix with adhesive plaster.
14. Prescribe: R/DOLPHIN 12.5 SUPP 1X2.
 R/FUCIDIN OINT. مع الفيار
15. Instruct the parents: 24hrs after circumcision, place the lower half of the baby in warm water and gently remove the dressing.
16. Dressing with betadine & dry gauze.
17. Increased bleeding may need suturing.

10. Surgical instruments

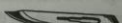
A. Sharps القواطع

Scalpels للشرايط

- 2 sizes of handle (4 and 6)

Blades:

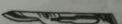
- No. 11: used for stab incisions
- No. 10: most skin incisions
- No. 15: fine incisions



Number 10



Number 11



Number 15

Scissors: المقصات

Dissecting

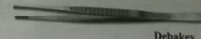
- Straight (e.g. Mayo)
- Curved (e.g. curved Mayo, McIndoe, Metzenbaum Nelson's)

Stitch cutting.

B. Forceps

Non-toothed غير مسننة

- Fine: (e.g. DeBakey, Adson's forceps) used for handling delicate tissues such as vessels, bowel.
- Heavy: used for general handling including specimen's and sutures.



DeBakey

Toothed مسننة

- Fine: (e.g. Gille's, McIndoe's forceps) used for handling skin, fine fascia.
- Heavy: e.g. Lane's forceps: used for holding heavy tissues such as fascia and scar tissues.



Adson pickup

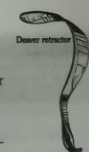
C. Retractors

Self-retaining retractors:

- Large: (e.g. Goliath retractor for abdominal incisions, Finichetto retractors for thoracic incisions).
- Small: (e.g. Travers/Norfolk & Norwich retractors for small skin and abdominal incisions)

Hand held retractors:

- Large (e.g. Deaver, Kolly, Morris)
- Small (e.g. Kilner "Catspaw" Langenbeck)



Deaver retractor

D. Questions & Answers

1. How should a pair of scissors/needle driver clamp be held?

With the thumb and 4th finger using the index finger to steady



2. Is it better to hold the skin with a Debakey or an Adson or toothed forceps?

Better to use an Adson or toothed forceps as it is better to cut the skin rather than crush it.

3. What helps steady the scissors or Bovie hand?

Resting it on the opposite hand

4. How should a pair of forceps be held?

Like a pencil

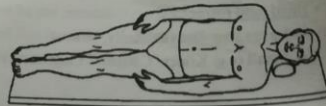


11. Surgical positions

1. **Supine**: patient lying flat on his back.

2. **Prone**: patient lying flat, face down.

3. **Left lateral decubitus**: patient lying down on his left side (think "left lateral decubitus = left side down")



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4. Right lateral decubitus

Patient lying down on his right side (think "right lateral decubitus = right side down")

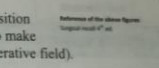
5. **Lithotomy**: patient lying supine with legs spread

6. Trendelenburg

Patient supine with head lowered

(also known as: head down burg); used during placement of a subclavian vein catheter as the veins distend with blood from gravity flow.

7. **Reverse Trendelenburg**: patient supine with head elevated (usual position for laparoscopic cholecystectomy to make the intestines fall away from the operative field).



12. Breast lumps

All breast lumps cause anxiety in the patient until a firm diagnosis is made.

► **Tip**: refer patients with breast lumps to a surgeon with an interest in treating breast cancer.

Common lumps

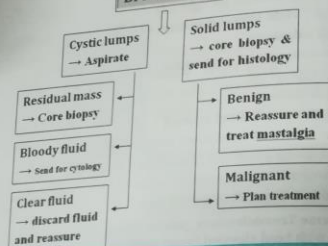
- Fibro adenoma
- Cyst
- Cancer
- Fibroadenosis (focal or diffuse nodularity)

Rare lumps

- Periductal mastitis
- Fat necrosis
- Abscess
- Galactocele
- Non-breast e.g. lipoma or sebaceous cyst.

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Breast lumps



13. Breast cancer

• Breast lump

- Commonest presenting symptom
- Usually **painless** (unless inflammatory carcinoma)
- **Hard** and **gritty** feeling
- May be **immobile** (held within breast tissue), **tethered** (attached to surrounding breast tissue or skin), or **fixed** (attached to chest wall).

• Nipple changes:

- An underlying cancer may affect nipple
- Destroyed
- Inverted
- Deviated
- Associated bloody discharge

• Skin changes:

- Carcinoma beneath skin causes **dimpling**, **puckering** or **colour**.
- Late presentation may be **skin ulceration** or **fungation**

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of the carcinoma through the skin.

- Lymph edema of the skin (**peau d'orange**) suggests local lymph node involvement.

• Systemic features:

- Weight loss, anorexia, bone pain, jaundice, malignant pleural and pericardial effusions, and anaemia.

14. Anal fissure

- **Sharp anal pain** on defecation.

- Anal fissure can mimic some of the symptoms of piles, but appears as a sore-looking crack in the skin at the anal margin.
- Often makes digital rectal examination extremely painful.

• Management:

- The patient should avoid constipation with a high fiber diet + bulking agent **R/BRAN IX3** OR **GIVE R/LACTULOSE SYP. IX3**
- Stool softness often allows fissure to heal

R/GLYCERIN SUPP. عند النوم

- Steroid / local anaesthetic supp. **R/PROCTOGLYEROL SUPP.** inserted **before** passing a stool, will allow the bowel to be opened less painfully.

- Glyceryl nitrate ointment applied to the anal margins; help relieve **sphincter** muscle spasm pain. **R/STN OINT**

- **R/DAFLON TAB. IX3**

- The anal fissure that is severe, or will not heal with suppositories and laxatives may require surgical referral for **anal stretch** or **partial internal sphincterotomy**.

References: GP. P.368

15. Haemorrhoids (piles)

- They are one of the commonest causes of rectal bleeding

• Diagnosis

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History: ask about

- The nature of the rectal bleeding: this is usually bright red, painless & often drips into the toilet pan or is seen on the toilet paper.
- This is **not mixed with stool**, but more often streaked on the surface of the stool.
- **Anal irritation**
- **Prolapsed or external piles**, which can be felt by the patient as lumps outside the anus. These may be confused with anal skin tags.

Examination: look for:

- **External piles and skin tags** which are obvious on inspection of the anal margin: **thrombosed piles** are acutely tender, hard, purple lumps.
- **Internal piles**, which can be seen on passing a proctoscope and look like small purple bulges about (1.5 inch) 4cm inside the anal margin.
- A mass higher up in the rectum, by performing a digital rectal examination.
- An abdominal mass palpating the abdomen.

N.B: Attention

Refer for colonoscopy any case of new rectal bleeding to piles in patient over 40 years as large bowel cancer and piles are both common and can co-exist.

Management:

- Advise the patient to **avoid "constipation, straining at stool and sitting for too long"**
- A laxative &/or a bulking agent often helps to prevent the piles worsening
- **R/SENNALAX** أقراص قبل النوم ٨-٢
- OR **AGIOLAX SACHETS 1X3**
- **R/BRAN 1X3**

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- Steroid/local anaesthetic oint. Or suppositories are useful for anal irritation or soreness and also for healing an anal fissure
- **R/Proctoglyvenol** supp. or oint.
- Consider **referral** for haemorrhoidectomy for 3rd degree piles, painful piles, heavy bleeding or failure of phenol injection.
- **Injection** of piles with oily phenol is easy & will symptomatically cure about 50% of cases.

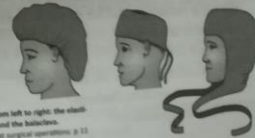
Source: see GP: P 268-269

16. Periods of incapacity after surgery

- Cholecystectomy: 2 weeks
- Hernia repair: 2 weeks
- Hysterectomy: 6 weeks
- Caesarean section: 6 weeks
- Coronary bypass: 6 months
- Hip replacement: 2 months

17. Assisting at surgical operations**A. Clothing in the operating theatre:****1. Scrubs:** بدلة العمليات

- To ↓ transmission of micro-organisms
- They are usually **"blue or green"**
- Choose a size that is too loose rather than too tight
- Scrubs don't need to be changed after each operation

2. Hat

Different styles of surgical hat. From left to right: the skull cap, the bouffant cap and the hood.

Reference of this figure: assisting at surgical operations p 33

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3. Face mask

How to fit the face mask
Note that the mask is to fit snugly against the face and the strap should be adjusted to ensure that the mask is secure.

**4. Eye protection****5. Foot wear****B. Personnel in the operating theatre****1. Doctors (surgeons & anaesthetists)****2. Nurses**

- Instrument nurses 'scrub nurses'
- Scout nurses 'runners'
- Anesthetic nurses

3. Others

- Theatre orderlies العطار
- Radiographers

C. The operation itself**• Preparing for the operation:**

1. Read up about the operation you will be assisting at.
اقرأ جيداً عن العملية التي ستساعد فيها
2. Familiarize yourself with the patient
3. Try to ensure you understand the **key points** about the patient, the pathology and the proposed operation
 - What is the disease?
 - Where is it?
 - What symptoms has the patient had?
 - What examination findings?
 - What complications?

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- What investigations?
- What other medical problems are there?

4. It is helpful to ask the patient where he expects the operation site to be.**5. Making the site of the pathology with a skin-marking pen is always a wise safeguard. (an arrow down pointing to the correct surgical site)****6. It is helpful to know about the patient's social circumstances**

For example: Van driver, who lives alone & needs to lift heavy things

- Furthermore, knowing these details help you remember the patient on the ward.
- During the operation for example, **think to yourself we are operating on Mr. Ahmed**, he's a delivery van driver who lives alone, sometimes needs to lift heavy things, so he may be unable to work for a few weeks post-operatively.
- By this way you will be able to remember, **he'll not just be the man with the hernia we did yesterday,**

He will be a real person

7. During the induction of anesthesia, stay away from the patient & avoid noise (disruptive to the smooth induction of anesthetic)**8. Check the shave:** is the correct area shaved?

On the correct side and with an adequate surrounding margin?
Has the shaved hair satisfactorily removed, or are tufts of it sitting on the skin, waiting to fall into an incision and cause a wound infection?

9. Insert a urinary catheter for long operation & operations where fluid-balance monitoring is important during or after surgery.**10. Help position the patient, and put thrombo-embolic compression devices, stockings or both**

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11. Ensure the diathermy plate is in place safely

- It should make good contact with the skin
- It should also be placed away from bony prominence and away from areas with poor blood supply such as a scar tissue
- Typically it is placed on the patient's thigh or less commonly the abdomen
- Occasionally, very hairy patients need to be shaved to allow the diathermy plate to stick properly

General intra-operative principles:

1.

- **Avoid** doing anything that might distract the surgeon
- **Don't allow** instrument or any part of your body to obscure the surgeon's view of the operation
- Keep **unnecessary movements** of your hands and vocal cords to a minimum, in particular. **Don't play with the instruments**

2. Anticipation "be prepared"

- It means that you anticipate what the surgeon is going to do next *توقع الخطوة القادمة*

3. Sharps:

- **Not passed directly hand by hand, but via a special dish**
- **Don't pass instruments behind someone else's back** as the person may not notice you doing it and move backwards unexpectedly causing contaminating or injury
- **Don't be tempted to use your fingers as retractors** in the wound; this will make the surgeon concerned about cutting you.

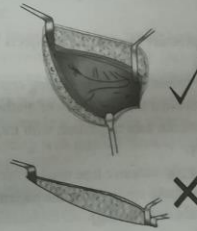
4. Steady hands:

- Stand with your feet about shoulder width apart, this will

steady you.

- Rest your pelvis or lower abdomen gently against the operating table.
- Avoid bumping the table and leaning on the patient excessively.
- It is most comfortable to have your elbows flexed at about 90° & to have a straight flexed back
- Whenever possible, steady your hand (e.g. at the wrist level) on something else
- Try to use both hands when assisting rather than keeping one hand idle. Even if you are only holding one instrument, you'll usually find that using both hands is less tiring and allows to steady instrument more accurately
- **Don't allow your hands to cross over each other**
- Try to see what the surgeon is doing at all times, but e out interfering with his or her view.

Improving the surgeon's view:



Top: the assistant is holding the two retractors (on the right of the illustration) well apart, at about 120°, this gives an approximately equilateral triangle, and the best surgical exposure.
Bottom: the assistant's retractors are too close together, at a narrow angle, resulting in poor surgical exposure.
Reference of this figure: assisting at surgical operations: p 29

General stages common to operations

2. Preparation by the anaesthetist

- Inserting intra-vascular cannula (intravenous or intra-arterial)
- Placing monitoring electrodes
- Administering the anesthetic itself
- Endotracheal intubation
- Other drugs that may be needed such as heparin or prophylactic drugs
- Anesthesia duration varies from 5 minutes in small operations to over one hour in major operations

2. Setting up (positioning the patient and equipments)

A. Patient positioning

- After anesthesia, patient will be helpless and his safety is taken over by the operation staff.
- Tissues that should be protected by proper patient positioning:

1. Skin

- **Avoid pressure against hard objects** by placing soft gel pads
- Prevent patient's skin from making contact with metal objects to avoid the possibility of diathermy burns
- Give particular care to patients with fragile skin such as elderly.
- **For example:** adhesive tape used to secure padding should not make contact with the patient's skin (may tear the skin or removing)

2. Nerves:

- **Avoid excessive traction** (e.g. on the brachial plexus by not abducting the shoulder to more than 90°)

and direct pressure (e.g. on the ulnar nerve at the elbow, the common peroneal nerve at the knee)

3. Musculo-tendinous structures

A. Applying anti-thrombotic devices

Include stockings & calf compression devices

B. Shaving

C. Skin preparation (painting the skin with the antiseptic solution)

D. Draping: placing sterile sheets around the surgical site

3. Making the incision with a surgical skin marking pen.

4. Entry: incising the skin & other tissues overlying the operative site such as fat, muscle, fascia and bone

5. Mobilization:

- Freeing up of the organ of interest from surrounding structuring

6. The key therapeutic objective:

- Incision (e.g. drainage of abscess)
- Excision:
 - As an investigation (e.g. lymph node biopsy)
 - As a definitive treatment (e.g. cholecystectomy)
- Evacuation (e.g. of a subdural hematoma)
- Exploration (e.g. of a traumatic wound)
- Manipulation (e.g. anti-reflux surgery, coronary artery by pose grafting with internal thoracic artery)
- Implantation

7. Reconstruction

8. Hemostasis (stopping of the bleeding)

- During the whole operation

9. Washing out (irrigation or lavage)

- This means irrigation of an area (often with normal saline) to remove small pieces of debris that may act as F.Bs, or as a culture medium for infection.

- This debris may include fatty tissue, blood clot and fibrin

10. Drain insertion

- Not all operation contain this stage

11. Closure of the wound

12. Dressing

- The basic function of all dressings is to protect the wound and help provide an environment that promotes wound healing

13. Other key points

- Avoiding injury to important structures near the one being on
- **Examples:**
 - In **thyroidectomy**, avoid injury to the recurrent laryngeal nerve & the external branch of the superior laryngeal nerve
 - In **cholecystectomy**, avoid injury to the bile duct
 - In **right hemi-colectomy**, avoid injury to the ureters and the duodenum
 - In **parotidectomy**, avoid injury to the facial nerve & into branches
- Read about these key points before the operation from a text book of operative surgery.

Diathermy:

Types:

- Mono polar diathermy.
- Bipolar diathermy.



Common diathermy instruments. From top: bipolar diathermy forceps, monopolar diathermy forceps, monopolar blade diathermy. The forceps have not been plugged into their leads, to show that the bipolar forceps has two electrodes, while the monopolar has only one. Note the two control buttons on the blade diathermy: one is for cutting and the other for coagulation.

Reference of this figure: assisting at surgical operations, p 77

Monopolar

The electric current passes () the operating instrument and a special conducting plate placed on the patient's body (usually the thigh).

Bipolar

The current passes () the 2 blades of a pair of forceps.

The tips of the forceps themselves must not be in direct contact with each other, otherwise the current will simply flow from one tip to the other without much burning of the tissues.

Used for cutting and coagulation.

Only used to stop bleeding and almost never for cutting.

There are 2 control buttons, one for cutting & one for coagulation.

To avoid obstructing the surgeon's view, touch blade near the top forceps, not down near the tips.

Make sure the blade touches only the surgeon's forceps, and not something else. (Such as the patient's else).

References:

Assisting at surgical operations, Pages 14-81-37-78

18. Some points in the operating room

- Your job in the OR will be to retract and answer questions posed by the attending physician & residents.
- More than 75% of the questions asked in the OR deal with anatomy, therefore, read about the anatomy and pathophysiology of the case, which will reduce the "I don't know".
- **Never argue** مع لا تتجادل مع with scrub nurses. **they are always right**, arguing with one of them will make matters worse.
- **Never touch** or take instruments from Mayo tray.

- Every day when approach the OR suite door **stop and ask yourself** if you have on scrubs, shoe covers, a cap, & a mask.
- Always wear eye protection when entering the OR.
- If you have questions in the OR, first ask if you can ask question because it may be a bad time.
- If you feel faint ask if you can sit down.
- Try to eat prior to going to the OR.

19. Preoperative

- | | |
|---|--|
| 1. What can a patient eat prior to a major surgery? | The patient should be NPO "Nil per mouth" after midnight the night before or at least for 8hrs before surgery. |
| 2. What risks should be discussed with all patients and documented on the consent form for a surgical procedure? | Bleeding, infection, anaesthesia , other risks are specific to the individual procedure. |
| 3. If a patient is on anti-hypertensive medications, should the patient take them on the day of the procedure? | Yes. |
| 4. If a patient is on an oral hypoglycemic agent should the patient take it on the day of surgery? | No, if he is to be NPO. |
| 5. If a patient is taking insulin , should he take it on the day of surgery? | No, only half of long acting insulin and start D5 in normal saline iv, check b1. Glucose levels often preoperatively, operative, and post-operatively. |

6. Should a patient who smokes **cigarettes** stop before an operation?

Yes, improvement is seen in just 2 to 4 weeks after smoking cessation.

7. What preoperative procedure should be performed before colon surgery?

Bowel prep, oral antibiotics, (neomycin & erythromycin base and IV antibiotic before incision.

- What preoperative medication can **decrease post-operative cardiac events & death**?

Beta blockers.

8. What must you always order preoperatively for your patient undergoing a major operation?

NPO / IV fluids. Preoperative antibiotics. Type and cross blood.

20. Some operating room questions

- | | |
|--|---|
| 1. What if I have to sneeze? | Backup STRAIGHT back. Don't turn your head, as the sneeze exits through the sides of your mask. |
| 2. What If I feel faint? | Don't be a hero. Say "I feel faint may I sit down?" This is no big deal and is very common (However it helps to always eat before going to the OR). |
| 3. What should I say when I first enter the OR? | Introduce yourself as a student state that you're going to scrub and ask if you need to get out your gloves and/or gown. |
| 4. Can I wear my rings and my watch when scrubbed in the OR? | No. |
| 5. When scrubbed is my back sterile? | No. |

6. When in the surgical gown, are my under arms sterile? No, don't put your hand under your arms.
7. How far down my gown is considered part of the sterile field? Just to your waist.
8. How far up my gown is considered sterile? Up to your nipples
9. How do I stand if I'm waiting for the case to start? Hands together in front above your waist.



When a new gown is opened, a sterile field is created by the hands and arms and the gown. The sterile field is the area between the hands and the gown.

10. Can I button up a surgical gown (when I'm not scrubbed) with bare hands? Yes. Remember, the back of the gown is not sterile.
11. How many pairs of gloves should I wear when scrubbed? 2 (2 layers).
12. What is the normal order of size of gloves, small pair, then large pair? No, usually the order is a larger size, followed by a smaller size (e.g., most men wear a size # 8 covered by a size # 7.5).
13. What is "scrub nurse" versus a "circulating nurse"? The scrub nurse is "scrubbed" and hands the surgeon sutures, instruments, and so forth. This person is

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14. What is the tray with the instruments called? Mayo tray
15. Can I grab things off the mayo tray? No, Ask the scrub nurse
16. How should you cut the sutures after a knot? Rest the cutting hand on the non cutting hand. Slip the scissors down to the knot and then cut the knot itself.



Cutting sutures: hand position. The tips of the scissors are rested on the fingers of the left hand, to stabilize them. Reference of this figure: assisting at surgical operations. Source: p. 26.

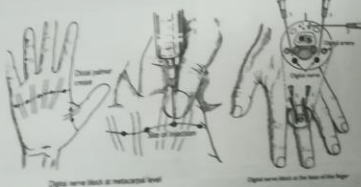
17. What should you do when you're scrubbed and someone is typing a suture? Ask the scrub nurse for a pair of scissors, so you are ready if you are asked to cut the sutures.
18. Why always wipe the betadine off your patient at the end of the procedure? The betadine can become very irritating and itchy.

21. Digital nerve block "Local anaesthesia"

1. Use 1% plain lidocaine.
2. Use 24 G needle.
3. Insert the needle from the dorsum on the lateral side of the base of the digit, angled slightly inwards towards the midline of the

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- digit until the needle can be felt under the skin on the flexor aspect.
4. Aspirate to **check the needle is not in a blood vessel**.
5. Slowly inject 0.5 ml then continue injecting as the needle is withdrawn.
6. Repeat on the medial side of the digit.
7. If anaesthesia is needed for the nail bed of the great toe give an additional injection of LA subcutaneously across the dorsum of the base of the proximal phalanx, to block the dorsal digital nerves and their branches.
8. Anaesthesia develops after about 5min.



Reference of these figures:
Oxford handbook of emergency medicine 2nd ed.

22. Surgical anatomy pearls

1. What is the drainage of the left testicular vein? Left renal vein.
2. What is the drainage of the RT testicular vein? IVC.
3. What are the prominent collateral circulations seen in portal HTN? Oesophageal varices, haemorrhoids, patent umbilical V. (caput medusa) and retroperitoneal vein via lumbar tributaries.

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4. What parts of the GI tract are retroperitoneal? Most of the duodenum, the ascending colon and the pancreas.
5. What is the artery bleeds during bleeding duodenal ulcer? Gastro-duodenal artery.
6. Give the locations of the following structures:
- Foregut
 - Midgut
 - Hindgut
- Mouth to ampulla of Vater
- Ampulla of Vater to distal third of transverse colon.
- Distal 1/3 of transverse colon to the anus.
- What is the order of the femoral vessels?
7. What is the order of the femoral vessels? The femora vein is medial to the femoral artery. (Think: NAVEl for the order of the Rt. femoral vessels: Nerve, Artery, Vein Extra-lymphatic tissue, Lymphatics.
8. What is MC Burney's point? One 1/3 the distance from the anterior superior iliac spine to the umbilicus (estimate the position of the appendix).
9. How can you find the appendix you find caecum? Track the taenia back as they converge on the origin of the appendix.
10. What is the strongest layer of the small bowel? Submucosa (not the serosa, think: Submucosa = Superior).
11. What is the Douglas pouch? Pouch () the rectum and bladder or uterus.
12. What does the thoracic duct empty into? Left subclavian vein, left internal vein junction.

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23. What the perfect surgical student carries in his coat?

- Stethoscope.
- Pen light.
- Scissors.
- Mini book on medications (e.g. trade names, doses).
- Mini book to practice typing.
- Sutures to practice tying.
- Pen / notepad / small notebook to write down pearls.
- Notebook or clipboard with patient's data.
- Small calculator.
- List of commonly used telephone numbers (e.g. radiology, Anaesthesia).

24. Language of Surgery

1. **Cholecystoduodenostomy** = an opening between the bile duct and the duodenum
2. **Rhinoplasty** = nose reshaping
3. **Pyelolithotomy** = destruction of pelvi-calceal stones
4. **Bilateral Mastopexy** = breast lifting
5. **Percutaneous arteriogram** = arterial tree imaging by direct puncture injection
6. **Loop ileostomy** = external opening in the small bowel with 2 sides
7. **Flexible cystourethroscopy** = internal bladder & urethral inspection
8. **Gastrojejunostomy** = surgical creation of an opening (anastomosis) in the stomach & jejunum
9. **Pyloroplasty** = surgical formation of a "new" pylorus
10. **Herniorrhaphy** = surgical repair of a hernia

■ Some definitions

1. **Abscess** = A cavity containing pus
- Remember if there is pus doubt let it out

2. **Fistula**:

An abnormal connection () 2 epithelial surfaces
Fistulae often close spontaneously but will not close in the presence of:
Malignant tissue
Distal obstruction
Foreign bodies (FBs)
Chronic inflammation
Formation of muco-cutaneous junction (e.g. stoma)

3. **Hernia**:

Any structure passing through another and so ending up in the wrong place.

4. **Ileus**:

A term of a dynamic bowel

5. **Sinus**:

A blind ending tract typically lined by epithelial or granulation tissue which opens to an epithelial surface.

6. **Stent**:

An artificial tube placed in a biological tube to keep it open

7. **Ulcer**:

An abdominal break in an epithelial surface

8. **Volvulus**:

Twisting of a structure around itself

Common GI sites include the sigmoid colon and caecum.

■ References:

1. OHCM: p551
2. OHCS: p24, 25
3. Surgical recall: p78, 79

Put in your mind

1. Catgut and vicryl are absorbable sutures.
2. Prolene, Nylon and silk are non-absorbable sutures.
3. Size of sutures are ordered from 10-0 (the smallest) to 4 (the largest available – size of sternal wires).

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4. 1-0 sutures are pronounced "one-oh".
5. Most of sutures are removed after 7-10 days.
6. During suturing hold the needle 2/3 of the way from the needle tip.
7. During suturing "Approximate don't strangulate" (don't close the wound under tension).
8. Speed of healing depends on site: face heals more quickly than trunk and limbs.
9. Don't give adrenaline with lidocaine in the penis, tip of the nose or ear pinna (may lead to gangrene).
10. In any wound make sure there is no F.B. & no deep injury.
11. You should irrigate bite wounds well.
12. Don't close puncture bite wounds which can't be satisfactory irrigated.
13. In wound management press any bleeding point for ≥ 1 min & look again.
14. Lidocaine with adrenaline is useful in scalp wounds which are bleeding profusely (but never in digits & toes)
15. If there is pus in doubt you should let it out.
16. When examining a female breast you should have a chaperone present with you. Ideally the chaperone should be female.
17. Most breasts will feel lumpy if pinched.
18. Milky, serous, or green brown discharges are almost acute always benign.
19. Acute mastalgia may be due to abscess, mastitis, fibrocystic disease, musculo-skeletal pain, skin pathology, MI, angina.
20. Ischemic skin (lack of hair, poor nails pale and flaky) (مشر).
21. Waxy white skin suggests acute severe ischemia.
22. Blue and mottled skin suggests acute irreversible ischemia.
23. Dark purple and shiny skin suggests chronic ischemia.
24. General stages common to operations are prep. by the anaesthetist, setting up, making the incision, entry, mobilization,

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, reconstruction, haemostasis, wasting out drain insertion, closure, dressing.

25. Types of diathermy: monopolar & bipolar.

Test yourself

1. Mention size of sutures used and absorbable or not?

Lips
Arm
Trunk
Hands

2. Contused wound over the elbow: the best type of sutures is?

Simple interrupted
Mattress
Inverted
Sub-cut

3. Which is absorbable?

Vicryl
Nylon
Catgut
Prolene
Silk

4. Which is smaller

6/0, 5/0, 3/0

أو لو غيان على جرحه أكثر من ٦ ساعات ولازم بتخيط تعمل إيه؟

6. Which is polyfilament:

Prolene, silk, vicryl, nylon, catgut?

7. Prescribe for anal fissure?

أو ولد عمره ١٥ سنة جاني مخبوط في رأسه . والتخيط ٥ غرز: أكشله روشتة

9. How to manage haemoptysis in a cut wound?

10. Prescribe for a case of piles?

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١١. عيان جايك بخراج عامل pointing تدهن عليه
مرهم فيوسيدين وتمشيه على حقن مضاد لحد ما
ينشف ولا تفتحه وتمشيه برضه على مضاد؟

١٢. طب هتخيط الخراج ولا لا؟

١٣. طب لو كان الخراج كبير جنا وحيت تفضى الصديد
لقيته لسه يجيب تعمل ليه؟

١٤. لما تبجي تفصح الخراج بتدى تخدير ولا لا؟

طبعاً لازم أفتح الصديد كويس جنا وأمشيه
على حقن مضاد لمدة ٣ أيام ثم أقراص لمدة ٤ أيام
على الأقل.
لا مش هتخيطه هو هيلحم لوحده
هنفضى على أد ما أقدر وبعدن أحط قبل وأغير عليه
كل يوم لحد ما الصديد يفت برضه ماشي على المضاد
هو المريض بيكون بيتألم جنا بس التخدير تاعل
الخراج نفسه مش هيجيب نتيجة لأن الصديد بهطل
عمل الليدوكاين ، بس ممكن تعمل nerve block

Answers

1. 6/0, absorbable
4/0, non
3/0, non
5/0, non

2. Mattress

3. Vicryl, catgut

4. 6/0

٥. أكت الجرح لغاية ما يظهر healthy tissue ينفع يعمل healing وبعدن خيط بس هيطول لغاية ما يلتئم.

6. Silk, vicryl, catgut

7. R/Proctoglyvenol supp. لبوس قبل الحمام

R/Glycerin supp. عند اللزوم

R/Bran 1x3

R/GTN oint. دهان حول الشرح عند اللزوم

8. R/Ceporex 500 1x2

قرص كل ١٢ ساعة لمدة أسبوع

R/Brufen 400 1x3

قرص ٣ مرات يومياً بعد الأكل
غبار يومياً بشاش وبتادين ثم يوم ويوم
فك الغرز بعد أسبوع

9. By compression over the wound

By suturing around the bleeder

Injecting adrenaline with lidocaine

Never close over a bleeder

10. R/Sennalax t. ٨-٢ أقراص قبل النوم

R/Bran 1x3

R/Proctoglyvenol supp or oint. عند اللزوم

ثم فصل الجراحة والله تعالى الفضل والمنة